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a database table having an entry for each pre-assigned order number matched to an object identity, which is a reference to the respective order; and

a database table having an entry for each object identity and pre-assigned operation number matched to the earliest activity of the respective operation.

60. (Deleted).

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, applicant requests that this be considered a petition therefore. Please charge the required Petition fee to Deposit Account No. 03-1240.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess to our Deposit Account No. 03-1240.

REMARKS

Reconsideration of the application, as amended, is respectfully requested. Claims 43, 58 and 60 are deleted. Claims 25-42, 44-57 and 59 remain in this application. A marked-up version of the amended claims, entitled "**Version With Markings To Show Changes Made**", is enclosed to indicate all changes made to the claims.

In the Office Action of February 4, 2003, claims 25-57 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Specifically, the Examiner objected to the use of the term "create," as it is recited in connection with "materials in the manufacturing sequence" in claims 30, 35, 39 and 51. The applicant respectfully points out that the actual meaning of the claim term "create," as it is used in the context of the amended claims, is described, *inter alia*, at pages 4-5 of the current specification as follows:

... a data structure is defined whereby individual working steps in the production process are defined as activities, and organized groups of such activities are defined as orders...

Activities are linked to each other via auxiliary objects, which contain information concerning the minimum and maximum time between activities. Orders may contain input and/or output interface nodes, representing the materials consumed and produced by activities within the order. An output interface node representing a quantity of material created from one order is linked via an auxiliary object to respective input interface node or nodes from other orders that require that material.

Accordingly, the specification defines the term "created materials," as those materials that are produced by activities within the order. See *Bell Atlantic Network Services, Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) ("a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning."); see also *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) ("the claim term will not receive its ordinary meaning if the patentee

acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.") The applicant respectfully submits that newly amended claims satisfy the requirements of 35 U.S.C. § 112, second paragraph.

In the same Office Action, pending claims 25-60 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Milne (U.S. Patent No. 5,943,484). It is respectfully argued that the current invention, as recited in the amended claims, is neither anticipated nor made obvious by Milne, either alone or in combination in other cited references. In Fig. 5, Milne depicts two processes A1 and A2 that may produce part A. *See* Milne, col. 8, lines 11-15. To create part A, process A1 consumes supply of component part W1, while manufacturing part A using process A2 consumes supply of component part W2, and linear programming planning algorithm selects the combination of each process to generate the required number of parts by controlling start and stop times for each step. *Id.*, col. 8, lines 16-45. However, neither Milne nor other cited references teach or suggest (a) organizing, linking and/or structuring access to the activities (processes), (b) grouping related activities into orders, and linking these orders so that the order that consumes a material follows the order that creates the respective material in the manufacturing sequence, or (c) linking the activities that represent materials being processed by manufacturing resources, so that activities within each order are linked in a sequence with temporal constraints between the activities of the same order, as well as

cross-order temporal constraints (*i.e.*, between activities in different orders in the manufacturing sequence, as discussed on pages 10-11 in reference to Fig. 6 of the current specification). In fact, Milne shows no organizational or structural connection between processes A1 and A2 on figure 5.

As discussed on pages 1 and 2 of the current specification, one of the key aspects of the current invention, as recited in the amended claims, is to provide a highly efficient data storage mechanism, organization and access to the data relevant to supply chain planning. The improved efficiency of the supply management system in accordance with the current invention reduces drastically the runtime of the planning facilities. *See* Specification, page 2, line 18. The novel organizational structure, along with grouping and indexed access method described in the specification (and recited in the amended claims), allows all related activities for a given resource to become much more rapidly accessible to an application program during the runtime and facilitates more efficient scheduling of the related activities on a particular resource in a proper chronological order, according to the scheduled time. *See* Specification, page 14, lines 1-15 & page 5, lines 1-16. This maximizes flow of the materials through the supply chain, resulting in significant practical and tangible benefits, such as faster and smoother delivery of orders to customers and improvements in the supply of components to meet the production demands (such as production demands of manufacturing plants, distribution centers, shop floor scheduling, etc.)

In view of the foregoing, the applicant submits that the present application is neither anticipated by nor rendered obvious by the cited prior art references. Attached hereto is a marked-up version, captioned "**Version With Markings To Show Changes Made**", showing changes made to the claims and specification by the current amendment. Entry of this amendment and an early favorable action on the merits are respectfully requested. Should any questions arise concerning this Amendment & Response, the Examiner is invited to telephone the undersigned attorney for the applicant.

CERTIFICATE OF MAILING
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail under 37 C.F.R. 1.8 in an envelope addressed to:
Assistant Commissioner for Patents, United States Patent and Trademark Office, Washington, D.C. 20231.
DATE: May 5, 2003
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Respectfully submitted,

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Version With Markings To Show Changes Made

30. (Twice Amended) A method for monitoring the use of resources and materials in a manufacturing sequence, comprising the steps of:

storing data representing said manufacturing sequence in a data structure;

organizing said data in said data structure [comprising] as one or more orders representing one or more materials being consumed and/or created in said manufacturing sequence[,];

linking said orders [being linked such] so that the order that consumes a material follows the order that creates the respective material in said manufacturing sequence[,];

linking, for each of said orders, [comprising] one or more activities representing materials being processed by manufacturing resources[,];

linking said activities [being linked] chronologically within each order, said link between activities further comprising data representing temporal constraints between said activities[,], and temporal constraints between activities in different orders in said manufacturing sequence; [and]

providing a link from one or more of said activities for one or more orders to a data that identifies a corresponding resource; and

determining based on a start time for a first of the orders whether a specific resource is in use at any given time during said manufacturing sequence.

35. (Amended) A method for facilitating the dynamic allocation of manufacturing resources and materials in a manufacturing sequence, comprising the steps of:

storing data for said manufacturing sequence in a data structure, said stored data structure comprising one or more orders representing one or more materials being consumed and/or created in said manufacturing sequence, said orders being linked such that the order that consumes a material follows the order that creates said material in said manufacturing sequence, each of said orders comprising one or more activities representing materials being processed by said manufacturing resources, said activities being linked chronologically within each order, said link between activities further comprising data of temporal constraints between said activities; [and]

determining a start time for a first activity of said manufacturing sequence;
and

determining using said data of temporal constraints in said data structure [to determine] start times for all of said activities that are performed on a particular one of said manufacturing resources.

36. (Amended) The method of claim [21] 35, wherein said data structure further comprises data representing temporal constraints between said activities in different orders in said manufacturing sequence.

37. (Amended) The method of claim [21] 35, and further comprising
adjusting said start time for one or more of said activities in said
manufacturing sequence; and
using said data structure to dynamically re-calculate said start times for one or more of said activities on subsequent ones of said manufacturing resources.

38. (Amended) The method of claim [21] 35, and further comprising the step of optimizing the use of said manufacturing resources in real time by dynamically allocating certain of said manufacturing resources to other uses based on the calculated availability of said manufacturing resources in said manufacturing sequence.

39. (Amended) A system for supply chain planning, said system having [comprising] means for storing data [and] in a data structure [stored on said means for storing], so that an application program can access data therein, said stored data structure comprising:

a plurality of orders, at least one of said orders having a pre-assigned order number, stored in the means for storing, each said order comprising:

a) one or more activities each representing a working step that is indivisible from a production planning perspective, and each being linked to a reference to all immediately preceding activities;

b) one or more input interface nodes each representing a material consumed by said order, each input interface node being linked to all activities that consume said material; [and]

c) one or more output interface nodes each representing a material created by said order, each output interface node being linked to all activities that create said material; and

d) a database table having an entry for each pre-assigned order number matched to a corresponding object identity, which is a reference to the respective order;
wherein one of said orders being a first order, each output interface node of said first order being linked to a respective input interface node of each of the other of said orders subsequent to said first order that are scheduled to consume the material associated with said output interface node of said first order.

43. (Deleted).

44. (Amended) The system of claim [43] 39, wherein said database table is stored in memory which includes a RAM buffer.

45. (Amended) The system of claim [43] 39, wherein when an order comprises a plurality of said activities therein, two or more of said activities together constituting an operation, each operation having a pre-assigned operation number, said data structure further comprising a database table having an entry storing each object identity and pre-assigned operation number matched to the earliest activity of the respective operation.

51. (Amended) A data structure stored so as to be accessed by an application program for supply chain planning in a data processing system, comprising:

a plurality of orders [at least one order], each of said plurality of [at least one] orders having at least one of:

a) one or more input interface nodes[;], wherein each input interface node represents a material consumed by said order; and

b) one or more output interface nodes[;], wherein each output interface node represents a material created by said order;

wherein one of said orders being a first order, [each] one or more of said output interface nodes of [a] said first order is linked to a [reference to the] respective input interface node of each subsequent order scheduled to consume the material associated with said output interface node of said first order.

58. (Deleted).

59. (Amended) A system for supply chain planning, said system comprising means for storing data and a data structure stored on said means for storing so that an application program can access data therein, said stored data structure comprising:

a plurality of orders having a pre-assigned order numbers, each said order representing at least one activity, wherein[:]

a) each activity representing a working step that is indivisible from a production planning perspective;

b) each activity being linked to a reference to all immediately subsequent activities;

c) each activity being linked to a reference to all immediately preceding activities;

d) said reference to all immediately preceding activities and said references to all immediately subsequent activities each have at least two attributes, including a minimum and a maximum time interval between activities and a type of temporal constraint;

e) a plurality of said activities within at least one of the orders constitutes an operation, having a pre-assigned operation number;

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[each order having a pre-assigned order number, said data structure further comprising] a database table having an entry for each pre-assigned order number matched to an object identity, which is a reference to the respective order[.]; and

a database table having an entry for each object identity and pre-assigned operation number matched to the earliest activity of the respective operation.

60. (Deleted).